

WHAT IS CLAIMED IS:

- 1 1. A method of establishing a subsequent path across a network to be used
2 to transport traffic carried along an initial path in the event of a failure or
3 signal degradation on said initial path, said method comprising:

4 receiving a digest representative of resources used along said initial
5 path, each of said resources along said initial path known by at least
6 one node on said initial path;

7 establishing said subsequent path, using said digest so that said
8 subsequent path may use resources distinct from said resources used
9 along said initial path.
- 1 2. The method of claim 1, wherein said digest comprises a Bloom filter
2 representative of resources known to each of said nodes.
- 1 3. The method of claim 2, wherein said Bloom filter has a fixed number of
2 bits, and may provides an authoritative indicator that a resource is used by
3 said initial path.
- 1 4. The method of claim 3, further comprising adding information representing
2 said resources along said initial path to said Bloom filter at each of said
3 nodes.
- 1 5. The method of claim 1, wherein each of said nodes on said initial path
2 contributes knowledge known thereat to form said digest.
- 1 6. The method of claim 4, wherein said initial path extends from an
2 originating node to a terminating node on said network, and said digest is
3 received at said originating node.
- 1 7. The method of claim 6, wherein said digest is received as a part of a
2 message confirming establishment of said initial path.

- 1 8. The method of claim 7, wherein said establishing comprises providing said
2 digest to each node along said subsequent path.
- 1 9. A method of forming a digest of information representative of network
2 resources along a path, comprising
- 3 at each node along said path, adding to said digest, an indicator of
4 resources used by said path and known to that node.
- 1 10. The method of claim 9, wherein said digest is a Bloom filter.
- 1 11. The method of claim 10, wherein said Bloom filter has a fixed number of
2 bits, and may provides an authoritative indicator that a resource is used by
3 said initial path.
- 1 12. The method of claim 10, wherein said path extends from an originating
2 node to a terminating node, and wherein said digest is formed as
3 confirmation of establishment of said path is passed from said terminating
4 node to said originating node.
- 1 13. The method of claim 12, wherein said resources comprise physical
2 resources used along said path.
- 1 14. The method of claim 13, wherein said resources comprise at least one of
2 physical port and a physical interconnect used by said path.
- 1 15. A network node along a path, comprising a processor operable to pass an
2 indicator of resources used along said path, known to said network node
3 to an adjacent node on said path.
- 1 16. The network node of claim 15, configured with local knowledge of local
2 resources used by paths including said network node.
- 1 17. The node of claim 16, wherein said node is further operable to
2 receive a digest of resources used along said path;

3 add said indicator to said digest;

4 and pass said digest to said adjacent node.

1 18. The node of claim **17**, wherein said digest comprises a Bloom filter, and
2 said node is operable to modify said Bloom filter to reflect said resources.

1 19. The node of claim **18**, wherein said indicator is formed as said node
2 acknowledges formation of said path.

1 20. The node of claim **19**, wherein said path extends from an originating node
2 to a termination node on said network, and said indicator is passed
3 upstream towards said originating node along said path.

1 21. A node on a communications network operable to establish a secondary
2 path across said network, said secondary path capable of carrying traffic
3 carried along an initial path, in the event of a fault or signal degradation
4 along said initial path, said node operable to use a digest representative of
5 resources used along said initial path in establishing said secondary path,
6 each of said resources along said initial path known by at least one node
7 on said initial path, so that said subsequent path may be established using
8 resources distinct from said resources used along said initial path.

1 22. Computer readable medium storing processor executable instructions that
2 when loaded at a node capable of establishing a path on a network, adapt
3 said node to pass an indicator of resources used along an established
4 path and known to said network node to an adjacent node on said
5 established path.